Attorney's Docket
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REMARKS

Favorable consideration of this application is requested in view of the foregoing amendments and the following remarks.

The specification has not been amended. Claims 1-2 are pending in the application. Claim 1 has been amended to more clearly set forth that the first and second probes are rotated about a common axis. Claim 2 was not changed. No new matter has been added.

CLAIM REJECTIONS

Claims 1-2 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson, U.S. 4,878,014, in view of Plomgren et al., U.S. 5,224,137.

Applicants have amended Claim 1 to more clearly set forth that the first and second probes are rotated about a common axis using Applicants' drive means. Support for the claim clarification is found in the specification at page 6, line 24 through page 7, line 6, and in FIG. 2a).

The most concise statement of Applicants' invention may be the one found in the abstract as follows:

> "A widely used scanner device that rotates a single helically shaped wire probe in and out of a particle beam at different beamline positions to give a pair of mutually perpendicular beam profiles is modified by the addition of a second wire probe. As a result, a pair of mutually perpendicular beam profiles is obtained at a first beamline position, and a second pair of mutually

> perpendicular beam profiles is obtained at a second beamline position." (emphasis added)

Applicants' specification notes that a single helically shaped wire probe such as used in the NEC Model BPM-80 (a probe similar to that of Simpson, U.S. Patent no. 4,878,014) is rotated so as to pass in and out of a particle beam to give a pair of mutually perpendicular beam profiles (Applicants' page 5, line 23 through page 6, line 11; and FIG. 1b). Nowhere do Applicants (or anyone else) state that such a wire probe may be rotated in and out of a particle beam to give a pair of mutually perpendicular beam profiles at the same beamline position. Rather, to use the example shown in Applicants' FIG. 1a and 1b, rotation of the bar 16 results in a vertical profile of the beam at location z_1 on the beam axis, and a horizontal profile of the beam at location z_2 on the beam axis.

Applicants teach that two such wire probes may be mounted on the bar 16, and the bar rotated such that the two wires are moved in and out of a particle beam to provide two mutually perpendicular beam scans at a first beamline position z_1, and two mutually perpendicular beam scans at a second beamline position z_2 (page 2, line 27 to page 3, line 6; also page 6, line 24 to page 7, line 6, and FIGS. 2a, 2b).

In the Office Action, the Examiner correctly states that:

> "Simpson does not disclose two mutually perpendicular scans of the particle beam, or a second probe providing two additional mutually perpendicular scans of the particle beam, such that two mutually perpendicular beam scans are obtained at said first position along the particle beam axis, and two mutually perpendicular beam scans are obtained at said second position along the particle beam axis."

The Examiner looks to Plomgren to supply what is not found in Simpson. The Office Action cites Plomgren et al. column 6 lines 60-68, column 7 lines 1-11, as follows:

> "As illustrated in both in FIGS. 3 and 7, both of the outer segments 74 and 76 of each of the devices 72 extend across operating scan path 48 in directions normal thereto. At the same time, the central segment extends across the scan path at an angle thereto, specifically at an angle of 45° in the particular embodiment shown. FIG. 6 shows how the beam spot 43 interacts with each of the devices 72. For purposes of illustration, the elliptical spot 43 is shown in FIG. 6 at the proper orientation and the desired location on the scan path (the central location laterally). Under these conditions, three pulses 80a, 80b, and 80c are produce equidistant from one another. If the beam spot is laterally further from base 64 than the desired scan path, then the pulses 80a and 80b will be closer together than the pulses 80b and 80c. On the other hand, if the beam spot is closer to base 64, the beam spots 80a and 80c will be closer than the beam spots 80a and 80b. If the beam spot is incorrectly oriented, the pulses would change in a manner corresponding to the pulses 70 in FIG. 5c."

The Examiner states that Plomgren's text, above, supports the Examiner's statement that "one probe provides two mutually perpendicular scans of the particle beam". The Examiner goes further to state that the same text of Plomgren also supports the Examiner's statement of "second probe providing two additional mutually perpendicular scans of the particle beam"

In the Office Action, the Examiner concludes the rejection of claim 1 by stating that:

> "It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second probe and two mutually perpendicular scans as taught by Plomgren et al. into Simpson for the purpose of a quick and automatic measurement system."

Referring to Applicants' claim 1 as currently amended, Applicants do not find a teaching, suggestion or motivation in the cited text of Plomgren above, or anywhere else in Plomgren regarding any probe providing Applicants' "two mutually perpendicular scans of the particle beam". Much less do Applicants find anywhere in Plomgren a "second probe providing two additional mutually perpendicular scans of the particle beam" Plomgren completely fails to provide what is lacking in Simpson to support an obviousness rejection of currently amended claim 1.

Applicants understand that Plomgren teaches a Z-shaped probe and a W-shaped probe (described principally at column 3, line 59 through column 11, line 12, and also in FIGS 3-7). Plomgren teaches that the z-shaped probe provides three signals during one scan of the beam, and he teaches that the w-shaped probe provides three signals during one scan of the beam. If either of these probes were to be combined with Simpson, five signals would be produced with every beam scan, i.e., the two profiles of Simpson and the three profiles of Plomgren. This assumes that Plomgren's probes are stationary when combined with Simpson.

Because the Examiner does not state whether Plomgren's probes would be maintained stationary or rotated when combined with Simpson, Applicants have considered rotating them. However, Applicants have been unable to visualize the complex set of signals that would result from rotating Plomgren's probes in some manner when rotating Simpson's probe. In any event, such signals would be nothing like the two mutually perpendicular beam scans that are obtained at a first position along the particle beam axis, and the two mutually perpendicular beam scans that are obtained at a second position along the particle beam axis as Applicants teach throughout their specification and claim in claim 1.

For the various reasons given above, Applicant's claim 1 as currently amended is deemed to be patentably distinct from Simpson in view of Plomgren et al.

Claim 2 is deemed to be patentably distinct because it depends from currently amended claim 1, a claim which Applicant deems to be allowable.

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Applicants thus believe that all claims are now in condition for allowance. Applicant invites the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. No fee is due for filing this Reply because it is being filed within the shortened statutory period as set in the Office Action dated April 25, 2005.

Respectfully submitted,

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